GITAM deemed to be University

Hyderabad

Internal Assessment-QuizII

# Programme: BTech Date:

**Subject Code:** 19EPH131 **Duration:** 30minutes

**Course Name:** Engineering Physics **Max. Marks:**5 m

**Name ofthe Student: Rollno:**

Multiple Choice Questions (MCQs) on “**Drift and Diffusion Current**”.

1. Diffusion current is due to \_\_\_\_\_\_\_\_\_\_\_  
   a) Applied electric field over a given distance  
   b) Variation in carrier concentration  
   c) Random motion of holes  
   d) Recombination of holes and electrons
2. Drift current is due to \_\_\_\_\_\_\_\_\_\_\_  
   a) Applied electric field over a given distance  
   b) Random motion of electrons  
   c) Random motion of holes  
   d) Recombination of holes and electrons
3. Conductors also have drift current.  
   a) True  
   b) False
4. What makes up the total current in a semi-conductor?  
   a) Only diffusion current  
   b) Only drift current  
   c) Drift+diffusion current  
   d) Drift+diffusion+biasing current
5. The equation Jn=qnµnE (A/cm2) represents\_\_\_\_\_\_\_\_\_\_\_  
   a) Drift current  
   b) Drift current density  
   c) Diffusion current  
   d) Diffusion current density
6. Is the statement “Diffusion current produces Drift current” true?  
   a) Yes  
   b) No  
   c) Cannot Say  
   d) Insufficient Data
7. What is the average net velocity in the direction of electric field?  
   a) Velocity of electrons  
   b) Velocity of holes  
   c) Drift velocity  
   d) Collision velocity
8. What is mobility?  
   a) Ease of carrier drift  
   b) Ease of current flow  
   c) Ease of access to the junction  
   d) Ease of movement
9. Why does a gradient occur in a semi-conductor?  
   a) Because of current flow  
   b) Because of diffusion current  
   c) Because of drift current  
   d) Because of difference in concentrations
10. How does diffusion current produce the depletion region?  
    a) The diffusion causes the holes and electrons to collect at the junction  
    b) The diffusion is because of the depletion region  
    c) The depletion region aids diffusion  
    d) The statement is not true
11. The intrinsic carrier density is 1.5 × 1016 m–3. If the mobility of electron and hole are 0.13 and 0.05 m2 V–1 s–1, calculate the conductivity.
    1. 4.32 X 10-4Ω-1m-1
    2. 5.32 X 10-4Ω-1m-1
    3. 3.42 X10-4Ω-1m-1
    4. 4.00 X 10-4Ω-1m-1

Multiple Choice Questions (MCQs) on “**The P-N Junction**”.

1. The p-region has a greater concentration of \_\_\_\_\_\_\_\_\_\_ as compared to the n-region in a P-N junction.  
   a) holes  
   b) electrons  
   c) both holes & electrons  
   d) phonons
2. In the p & n regions of the p-n junction the \_\_\_\_\_\_\_\_\_ & the \_\_\_\_\_\_\_\_\_\_\_ are the majority charge carriers respectively.  
   a) holes, holes  
   b) electrons, electrons  
   c) holes, electrons  
   d) electrons, holes
3. The n-region has a greater concentration of \_\_\_\_\_\_\_\_\_ as compared to the p-region in a P-N junction diode.  
   a) holes  
   b) electrons  
   c) both holes & electrons  
   d) phonons
4. Which of the below mentioned statements is false regarding a p-n junction diode?  
   a) Diode are uncontrolled devices  
   b) Diodes are rectifying devices  
   c) Diodes are unidirectional devices  
   d) Diodes have three terminals
5. In the p & n regions of the p-n junction the \_\_\_\_\_\_\_\_\_ & the \_\_\_\_\_\_\_\_\_\_\_ are the minority charge carriers respectively.  
   a) holes, holes  
   b) electrons, electrons  
   c) holes, electrons  
   d) electrons, holes
6. When a physical contact between a p-region & n-region is established which of the following is most likely to take place?  
   a) Electrons from N-region diffuse to P-region  
   b) Holes from P-region diffuse to N-region  
   c) Both of the above mentioned statements are true  
   d) Nothing will happen
7. Which of the following is true in case of an unbiased p-n junction diode?  
   a) Diffusion does not take place  
   b) Diffusion of electrons & holes goes on infinitely  
   c) There is zero electrical potential across the junctions  
   d) Charges establish an electric field across the junctions
8. Which of the following is true in case of a forward biased p-n junction diode?  
   a) The positive terminal of the battery sucks electrons from the p-region  
   b) The positive terminal of the battery injects electrons into the p-region  
   c) The negative terminal of the battery sucks electrons from the p-region  
   d) None of the above mentioned statements are true